## WHAT IS CLAIMED IS:

1.      A method for generating a table for enhancing the print quality of input raster pel'data, comprising:

     generating an output value for different patterns of pel data, wherein each output value indicates a sub-pulse width power to charge to a sub-pel region within a pel and position information indicating the justification of the sub-pel region within the pel; and

     forming a look-up table from the generated output values that enhances print quality.

2.      The method of claim 1, wherein toner is attracted to the charged sub-pel region.

3.      The method of claim 1, wherein one output value is generated for a subject pel depending upon the pattern of pels surrounding the subject pel, wherein there is one output value for each possible pattern of surrounding pels.

4.      The method of claim 3, wherein the subject pel is at the center of the surrounding pels, and wherein the surrounding pels form a diamond shape.

5.      The method of claim 1, wherein the position information is used to cluster sub-pel regions next to each other in adjacent pels and justify an edge pel toward a black filled region adjacent to the edge pel.

6.      The method of claim 1, wherein the output value for the sub-pulse width power is generated by adjusting a base sub-pulse width power by weights indicating the affect of a subject black pel on surrounding pels.

1      7.     The method of claim 6, wherein the output value is generated for the

2   subject black pel affecting the surrounding pels, wherein the surrounding pels

3   comprise multiple regions of pels, wherein there is a separate weight for each region

4   that is used to adjust the base sub-pulse width power of the subject black pel to
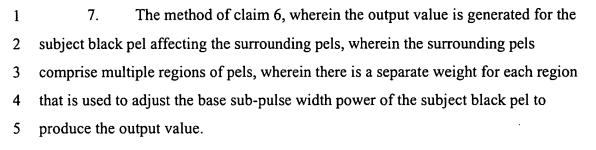
5   produce the output value.


1      8.     The method of claim 6, wherein, for each region, there is a black

2   weight indicating the affect of the subject black pel on a black pel in the region and a

3   white weight indicating the affect of the subject black pel on a white pel in the region,

4   wherein adjusting the base sub-pulse width power for the subject black pel comprises,

5   for each region:

6      adding the black weight to the sub-pulse width power for each black pel in the

7   region; and

8      subtracting the white weight from the sub-pulse width power for each white

9   pel in the region.


1      9.     The method of claim 7, wherein the for each region are calculated by

2   solving an equation that uses the weights for each region to adjust an input array

3   comprising the density at each greyscale level at the base sub-pulse width power to

4   produce a target output array comprising desired density for each greyscale level.


1     10.    The method of claim 9, wherein the adjustment of the input array using

2   the weights is performed by adding a first function defining the density of the pels in

3   the regions for each greyscale level after adjusting the subject black pel with the

4   weights, subtracting a second function defining the density of the pels in the regions

5   for each greyscale level with no weight affect, adding a third function defining the

6   density of the black subject pel for each greyscale level after adjusting the center pel

7   with the weights, and subtracting a fourth function defining the density of the black

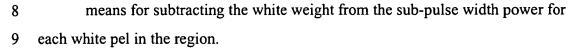8   subject pel with no weight affect.

1      11.    The method of claim 10, wherein the four functions defining the affect

2 of the black subject pel in each region are based on a greyscale level corresponding to

3 a percentage of the subject black pel that affects the region measured at different

4 power levels.

1      12.    The method of claim 11, wherein the affect of the subject black pel in

2 each region further comprises:

3      using the halftone algorithm to determine, for each region, black and white

4 density arrays indicating a percentage of black and white pels, respectively, in the

5 region for each greyscale level; and

6      for each region, multiplying the black and white density arrays and the results

7 of the functions indicating the affect of the subject black pel on the region to

8 determine the black and white density effects of the subject black pel on the region.

1      13.    A system for generating a table for enhancing the print quality of input

2 raster pel data, comprising:

3      means for generating an output value for different patterns of pel data,

4 wherein each output value indicates a sub-pulse width power to charge to a sub-pel

5 region within a pel and position information indicating the justification of the sub-pel

6 region within the pel; and

7      means for forming a look-up table from the generated output values that

8 enhances print quality.

1      14.    The system of claim 13, wherein toner is attracted to the charged sub-

2 pel region.

1    15.    The system of claim 13, wherein one output value is generated for a

2    subject pel depending upon the pattern of pels surrounding the subject pel, wherein

3    there is one output value for each possible pattern of surrounding pels.


1    16.    The system of claim 15, wherein the subject pel is at the center of the

2    surrounding pels, and wherein the surrounding pels form a diamond shape.


1    17.    The system of claim 13, wherein the position information is used to

2    cluster sub-pel regions next to each other in adjacent pels and justify an edge pel

3    toward a black filled region adjacent to the edge pel.


1    18.    The system of claim 13, further comprising means for adjusting a base

2    sub-pulse width power by weights indicating the affect of a subject black pel on

3    surrounding pels to generate the output value for the sub-pulse width power.


1    19.    The system of claim 18, wherein the output value is generated for the

2    subject black pel affecting the surrounding pels, wherein the surrounding pels

3    comprise multiple regions of pels, wherein there is a separate weight for each region

4    that is used to adjust the base sub-pulse width power of the subject black pel to

5    produce the output value.


1    20.    The system of claim 18, wherein, for each region, there is a black

2    weight indicating the affect of the subject black pel on a black pel in the region and a

3    white weight indicating the affect of the subject black pel on a white pel in the region,

4    wherein the means for adjusting the base sub-pulse width power for the subject black

5    pel comprises, for each region:

6        means for adding the black weight to the sub-pulse width power for each

7    black pel in the region; and

8       means for subtracting the white weight from the sub-pulse width power for

9    each white pel in the region.


1       21.    The system of claim 19, further comprising means for calculating the

2    weights for each region by solving an equation that uses the weights for each region to

3    adjust an input array comprising the density at each gray scale level at the base sub-

4    pulse width power to produce a target output array comprising desired density for

5    each gray scale level.


1       22.    The system of claim 21, wherein adjustment of the input array using

2    the weights is performed by adding a first function defining the density of the pels in

3    the regions for each gray scale level after adjusting the subject black pel with the

4    weights, subtracting a second function defining the density of the pels in the regions

5    for each gray scale level with no weight affect, adding a third function defining the

6    density of the black subject pel for each gray scale level after adjusting the center pel

7    with the weights, and subtracting a fourth function defining the density of the black

8    subject pel with no weight affect.


1       23.    The system of claim 22, wherein the four functions defining the affect

2    of the black subject pel in each region are based on a gray scale level corresponding

3    to a percentage of the subject black pel that affects the region measured at different

4    power levels.


1       24.    The system of claim 23, wherein the affect of the subject black pel in

2    each region is determined by:

3           means for using the halftone algorithm to determine, for each region, black

4    and white density arrays indicating a percentage of black and white pels, respectively,

5    in the region for each gray scale level; and

6  means for multiplying, for each region, the black and white density arrays and

7  the results of the functions indicating the affect of the subject black pel on the region

8  to determine the black and white density effects of the subject black pel on the

9  region.

1  25.  An article of manufacture for use in generating a table for enhancing

2  the print quality of input raster pel data, the article of manufacture comprising at least

3  one computer program capable of causing a processor to perform:

4  generating an output value for different patterns of pel data, wherein each

5  output value indicates a sub-pulse width power to charge a sub-pel region within a pel

6  and position information indicating the justification of the sub-pel region within the

7  pel; and

8  forming a look-up table from the generated output values that enhances print

9  quality.

1  26.  The article of manufacture of claim 25, wherein toner is attracted to

2  the charged sub-pel region.

1  27.  The article of manufacture of claim 25, wherein one output value is

2  generated for a subject pel depending upon the pattern of pels surrounding the subject

3  pel, wherein there is one output value for each possible pattern of surrounding pels.

1  28.  The article of manufacture of claim 27, wherein the subject pel is at

2  the center of the surrounding pels, and wherein the surrounding pels form a diamond

3  shape.

1  29.  The article of manufacture of claim 25, wherein the position

2  information is used to cluster sub-pel regions next to each other in adjacent pels and

3  justify an edge pel toward a black filled region adjacent to the edge pel.

1      30.    The article of manufacture of claim 25, wherein the output value for

2  the sub-pulse width power is generated by adjusting a base sub-pulse width power by

3  weights indicating the affect of a subject black pel on surrounding pels.

1      31.    The article of manufacture of claim 30, wherein the output value is

2  generated for the subject black pel affecting the surrounding pels, wherein the

3  surrounding pels comprise multiple regions of pels, wherein there is a separate weight

4  for each region that is used to adjust the base sub-pulse width power of the subject

5  black pel to produce the output value.

1      32.    The article of manufacture of claim 30, wherein, for each region, there

2  is a black weight indicating the affect of the subject black pel on a black pel in the

3  region and a white weight indicating the affect of the subject black pel on a white pel

4  in the region, wherein adjusting the base sub-pulse width power for the subject black

5  pel comprises, for each region:

6      adding the black weight to the sub-pulse width power for each black pel in the

7  region; and

8      subtracting the white weight from the sub-pulse width power for each white

9  pel in the region.

1      33.    The article of manufacture of claim 31, wherein the weights for each

2  region are calculated by solving an equation that uses the weights for each region to

3  adjust an input array comprising the density at each gray scale level at the base sub-

4  pulse width power to produce a target output array comprising desired density for

5  each gray scale level.

1      34.    The article of manufacture of claim 33, wherein the adjustment of the

2  input array using the weights is performed by adding a first function defining the

3  density of the pels in the regions for each gray scale level after adjusting the subject

4   black pel with the weights, subtracting a second function defining the density of the

5   pels in the regions for each gray scale level with no weight affect, adding a third

6   function defining the density of the black subject pel for each gray scale level after

7   adjusting the center pel with the weights, and subtracting a fourth function defining

8   the density of the black subject pel with no weight affect.

1       35.    The article of manufacture of claim 34, wherein the four functions

2   defining the affect of the black subject pel in each region are based on a gray scale

3   level corresponding to a percentage of the subject black pel that affects the region

4   measured at different power levels.

1       36.    The article of manufacture of claim 35, wherein the affect of the

2   subject black pel in each region further comprises:

3       using the halftone algorithm to determine, for each region, black and white

4   density arrays indicating a percentage of black and white pels, respectively, in the

5   region for each gray scale level; and

6       for each region, multiplying the black and white density arrays and the results

7   of the functions indicating the affect of the subject black pel on the region to

8   determine the black and white density effects of the subject black pel on the region.

1       37.    A computer-readable transmission medium including at least one look-

2   up table data structure used for enhancing the print quality of input raster pel data,

3   comprising:

4       an output value for different patterns of pel data, wherein each output value

5   includes:

6          (i) a sub-pulse width power to charge to a sub-pel region within a pel,

7       and

8          (ii) position information indicating the justification of the sub-pel

9       region within the pel.

1      38.    The computer-readable transmission medium of claim 37, wherein the

2    look-up table data structure one output value for a subject pel depending upon the

3    pattern of pels surrounding the subject pel, wherein there is one output value for each

4    possible pattern of surrounding pels.

1      38.    The computer-readable transmission medium of claim 37, wherein the

2    position information is used to cluster sub-pel regions next to each other in adjacent

3    pels and justify an edge pel toward a black filled region adjacent to the edge pel.